
 $^{232}\text{Th}(\text{n},\gamma)^{233}\text{Th}$ THERMAL REACTION CROSS SECTION MEASUREMENT

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The thermal neutron capture cross section of the $^{232}\text{Th}(\text{n},\gamma)^{233}\text{Th}$ reaction was experimentally obtained. This work was motivated by the IAEA Coordinated Research Project on Evaluated Nuclear Data for Thorium-Uranium Fuel Cycle. The irradiations were performed at the IPEN IEA-R1m 2MW pool research reactor. The targets consisted of ~ 15 mg of high purity metallic Thorium (Reactor Experiments Inc., USA). The thermal and epithermal neutron fluxes were monitored with the $^{197}\text{Au}(\text{n},\gamma)^{198}\text{Au}$ reaction with a pair of Au-Al alloy foils with and without cadmium cover placed with the sample in each irradiation. The neutron fluencies were determined using the Westcott formalism. The reaction yields were determined from the residual gamma-ray activity, measured with an HPGe detector (35 % efficiency), calibrated with a standard ^{152}Eu source. The detector efficiency was fitted by the least-square method applying covariance analysis to all uncertainties involved. The obtained result for σ_{th} was 6.23 ± 0.20 b and for σ_0 , 7.19 ± 0.20 b. These results were compared with previous measurements and evaluations.